HIGH RESOLUTION CORING PROGRAM NARRATIVE

The following information summarizes the collected samples and requested analyses for the Lower Passaic River Restoration Project High Resolution Coring Program. This sediment coring program is also described in Section 4.0 of Field Sampling Plan (FSP) Volume 1 (Malcolm Pirnie, Inc., January 2006).

SUMMARY OF HIGH RESOLUTION CORING PROCESS

To meet the data needs and objectives described in FSP Volume 1, the following steps were implemented to conduct the High Resolution Coring Program:

- Evaluate target locations for high resolution cores using Tierra Solutions, Inc. 1995 Remedial Investigation (RI) dataset, geomorphology, and other published data.
- Conduct a reconnaissance, collect surface sediment grab samples, and analyze samples for beryllium-7 to determine if target locations are receiving recent deposition.
- Collect high resolution sediment cores (multiple cores were collected at each target location to provide sufficient sediment volume for radiological analyses, chemical analyses, x-radiograph, physical properties, and an archived core).
- Screen collected cores by processing for radiological analyses (cesium-137) so that radiological downcore profiles can be evaluated from a geochemical perspective. Parameters with very short holding times (*e.g.*, total organic carbon) were submitted simultaneously (approximately 40 slices per core).
- Only high resolution cores with acceptable radiological profiles (common names: 7A, 9A, 26A, 29A, and 32A) were selected for further chemical analyses (approximately 20 slices per core).
- Budget constraints restricted the chemical analyses of slices from two cores (common names: 26A and 32A) to approximately 6 slices per core.
- Archived cores were disposed or turned over to Monclair State University in April 2007.

Field work was conducted in accordance with the Lower Passaic River Restoration Project Work Plan (Malcolm Pirnie, Inc., August 2005) and the Lower Passaic River Restoration Project Quality Assurance Project Plan (Malcolm Pirnie, Inc., August 2005) and accompanying addendums.

DETAILS ON THE HIGH RESOLUTION CORE PROGRAM

As part of the 2005 United States Environmental Protection Agency (USEPA) RI sampling program, Malcolm Pirnie, Inc. collected high resolution sediment cores from 14 locations in the Lower Passaic River and Upper Passaic River from September 14, 2005 to October 25, 2005 (Table 1). These locations were previously identified as potential depositional sites through a review of available data and via a field reconnaissance program (August 29, 2005 to September 8, 2005), which indicated that sediments at these locations were likely to be historically depositional, undisturbed, contained beryllium-7 at the surface (0-1 cm), and had a fine-grained sediment texture.

Table 1: High Resolution Cores Collected

Sample Event in Database	Sample Date	Location Identification in Database	Common Core Name	Core Identification in Database	Number of Slices Per Core
1	09/14/2005	G0000002	5A	54	46
			5B	62	Not processed
			5C	63	Not processed
			5D	55	Not processed
2	09/19/2005	G0000004	7A	56	38
			7F	59	1
			7B	64	Not processed
			7C	65	Not processed
			7D	66	Not processed
284	09/20/2005	G0000005	9A	57	40
			9F	60	1
			9B	67	Not processed
			9C	68	Not processed
			9D	69	Not processed
290	09/22/2005	G0000006	10A	58	47
			10B	70	Not processed
			10C	71	Not processed
			10D	61	41
291	09/26/2005	G0000007	17A	72	35
			17B	74	Not processed
			17C	75	Not processed
			17D	73	37
292	09/28/2005	G0000008	18A	76	39
			18B	77	Not processed
			18C	78	Not processed
293	10/04/2005	G0000009	37A	79	38
			37B	82	Not processed
			37D	80	47
319	10/06/2005	G0000011	1A	85	31
			1B	86	Not processed
			1D	87	49
318	10/07/2005	G0000010	32A	81	34
			32B	83	Not processed
			32D	84	43
322	10/07/2005	G0000012	29A	88	49
			29B	89	Not processed
			29D	90	43
323	10/12/2005	G0000013	24A	91	20
			24B	92	Not processed
			24D	93	19
324	10/12/2005	G0000014	26A	94	32
			26B	95	27
			26D	517	Not processed
519	10/21/2005	G0000016	13A	518	43
			13B	519	Not processed
			13D	520	41

Table 1: continued

Sample Event in Database	Sample Date	Location Identification in Database	Common Core Name	Core Identification in Database	Number of Slices Per Core
520	10/25/2005	G0000017	28A	521	24
			28B	522	Not processed
			28D	523	19

The "A" core was designated the primary core for chemical analyses. The "D" core was designated the secondary core and was originally intended to provide additional sediment mass for metals analysis, if necessary. The "D" core was ultimately determined to be significantly different from the "A" core based on the radiological data; consequently, all chemical analyses were obtained from the "A" core. The "C" core was collected for anticipated x-radiograph analyses; however, the collection of the "C" core was ceased after September 26, 2005. Note that x-radiograph analyses were not performed due to limited schedule and funds. The "B" core was designated as the archived core and was stored frozen at the field facility.[1] A separate beryllium-7 grab sample (0-1 centimeter) was collected at two coring locations and designated as core "F."[2]

High resolution cores penetrated to the red-brown clay layer, sand, or to refusal (refer to attached geological logs). The cores were processed vertically using a piston extrusion method. The core was divided into approximately 40 sediment intervals per core with the top 8 intervals being half the thickness of the deeper intervals. Additional samples were collected from the red-brown clay layer or the core bottom sand layer. This combination resulted in the first four samples each representing approximately a 2-year depositional time interval (with the top interval representing approximately the 2005-2003 time horizon), and the remainder of the samples each representing approximately 4-year time intervals. During core processing, sediment samples from every other interval in the core were analyzed for cesium-137 by Outreach Laboratory (Broken Arrow, Oklahoma) to allow for the geochronological dating of the sediment cores.[3] Samples from every sediment core interval were analyzed for total organic carbon by Severn Trent Laboratories (South Burlington, Vermont) and shipped immediately due to the required holding time (Table 2). The remaining samples were frozen (-10°C) in a walk-in freezer at the field facility, in accordance with the Lower Passaic River Restoration Project Quality Assurance Project Plan (Malcolm Pirnie, Inc., August 2005) and accompanying addendums.

[1] For sampling event 324, the labeling of the cores was switched in the field. Consequently, Core ID 95 was designated the "B" core or secondary core, and Core ID 517 was designated as the "D" core or archived core.

[2] Core ID 59 (common name 7F) and Core ID 60 (common name 9F) represent separate grab samples for beryllium-7 analysis. For the remaining cores, beryllium-7 was analyzed as part of the radiological suite for the top slice of the core.

[3] The radiological suite originally included lead-210; however, matrix interferences limited the detection of lead-210. For select cores, polonium-210 was analyzed as a surrogate for lead-210.

Table 2: Radiological and Total Organic Carbon Samples Shipped from High Resolution Cores

Common Core Name	Core Identification in Database	Number of Slices Per Core	Number of Radiological Samples Shipped[a]	Number of Total Organic Carbon Samples Shipped[a]
5A	54	46	27	46
7A	56	38	32	38
9A	57	40	31	40
10A	58	47	35	50
10D	61	41	28	0
17A	72	35	22	35
17D	73	37	29	0
18A	76	39	21	42
37A	79	38	20	41
37D	80	47	29	0
1A	85	31	18	33
1D	87	49	25	0
32A	81	34	25	34
32D	84	43	22	0
29A	88	49	36	49
29D	90	43	25	0
24A	91	20	11	23
24D	93	19	11	0
26A	94	32	21	32
26B	95	27	14	0
13A	518	43	25	47
13D	520	41	30	0
28A	521	24	12	26
28D	523	19	11	8

a: Number of samples shipped includes field duplicates.

Cores with acceptable cesium-137 radiological profiles (as determined through a geochemical review and characterized below) were further analyzed for a suite of inorganic and organic parameters. In some instances, archived radiological parameters were shipped to further resolve the cesium-137 peak. An acceptable radiological profile contained (1) no discontinuities, (2) a cesium-137 peak that was greater than 1 picocurie per gram (pCi/g) and represented the 1963 time horizon, and (3) for deeper cores, a cesium-137 minimum concentration that represented the 1954 time horizon.

High resolution cores with an acceptable cesium-137 profile consisted of the following: *Core ID 56 (common name 7A)* at river mile (RM) 1.4, *Core ID 57 (common name 9A)* at RM2.2, *Core ID 94 (common name 26A)* at RM7.8, *Core ID 88 (common name 29A)* at RM11, and *Core ID 81 (common name 32A)* at RM12.6. Note that *Core ID 72 (common name 17A)* at RM3.5 was initially selected as an acceptable core; however, further evaluation determined that the core was located in an erosional area, and laboratory analyses were ceased. For these selected cores, samples from every interval of each core were analyzed for target analyte list (TAL) metals including mercury and titanium by the Contract Laboratory Program (CLP) laboratory, Sentinel, Inc. (Huntsville, Alabama).

For organic compounds, including polycyclic aromatic hydrocarbons (PAH) compounds, polychlorinated biphenyl (PCB) congeners, polychlorodibenzodioxins/furans (PCDD/F), and pesticides, sediment samples were defrosted and manually combined (every two intervals, consecutively) to yield approximately 20 samples per selected core. Organic analyses were conducted by Axys Analytical Services, Inc. in British Columbia, Canada. Table 3 includes more information on these five selected cores.

Table 3: Detailed Information on High Resolution Cores Selected for Chemical Analysis

Core ID	Common Name	Geological Log [a]	Number of Metal Samples	Number of PAH samples	Number of PCDD/F, PCB, and Pesticide Samples after Manual Mixing
56	7A (RM1.4)	Entire core silt (0-502 cm)	38	24	19 [b]
57	9A (RM2.2)	Silt (0-604 cm) Silt-clay (604-680 cm)	40	26	22
72	17A (RM3.5)	Silt (0-299 cm)	35	25	4 [c]
94	26A (RM7.8)	Silt (0-95 cm) Sand (95-119 cm)	32	20	18 [d]
88	29A (RM11)	Silt (0-221 cm) Sand (221-251 cm)	49	29	27
81	32A (RM12.6)	Silt (0-138 cm) Sand (138-172 cm)	34	24	19 [e]

a: Refer to attached geological logs for more information on the high resolution sediment cores.
b: For Core ID 56 (common name 7A at RM1.4) the sample jars for 90-120 cm and 150-180 cm for PCDD/F, PCB congeners, and pesticide analyses were not shipped due to limited funding.
c: For Core ID 72 (common name 17A at RM3.5), only four sample jars for PCDD/F, PCB, and pesticides were shipped. Laboratory analyses were ceased because the core was determined to be located at an erosional site.
d: For Core ID 94 (common name 26A at RM7.8), only five sediment slices were analyzed for PCDD/F and PCB congeners due to limited funding: 0-3 cm, 3-6 cm, 6-9 cm, 9-15 cm, and 77-83 cm. These five sediment slices were selected to examine recent deposition near the surface of the sediment core.
e: For Core ID 81 (common name 32A at RM12.6), only six sediment slices were analyzed for PCDD/F and PCB congeners due to limited funding: 0-3 cm, 3-6 cm, 24-34 cm, 59-69 cm, 89-99 cm, and 129-138 cm. These sediment slices were selected to examine decadal contaminant loads.

For clarification on the sediment slices that were manually combined, please refer to the "Comments" field in the database. Note that since the project database is designed as a relational database system, both sediment slices will appear as individual records in the database along with the corresponding concentration. These concentrations are **not** duplicate samples but reflect the combination of the two samples. PCB congeners, PCDD/F congeners, and pesticides were extracted from the same sample jar whereas PAH compounds were submitted as a separate sample jar (due to the shorter holding time for PAH). Because these analyses come from different jars, the sediment slice combination for the PAH sample jars does not necessarily match the PCB/PCDD/Pesticide combination. All pesticide samples in the High Resolution Sediment Core Program were analyzed by gas chromatography/low-resolution mass spectroscopy (GC-LRMS), except for the 12 samples listed in Table 4, which were analyzed by a gas chromatography/high-resolution mass spectroscopy (GC-HRMS) method.

Table 4: High Resolution Core Samples Analyzed by GC-HRMS

Sample ID in Database	Core ID in Database	Common Core Name	Sediment Depth (centimeters)
LPRP-SCSH-PSR-001471	56	Core 7A	0-15 cm
LPRP-SCSH-PSR-001472	56	Core 7A	285-315 cm
LPRP-SCSH-PSR-001473	57	Core 9A	0-18 cm
LPRP-SCSH-PSR-001474	57	Core 9A	452-490 cm
LPRP-SCSH-PSR-001466	94	Core 26A	0-3 cm
LPRP-SCSH-PSR-001476	94	Core 26A	77-83 cm
LPRP-SCSH-PSR-001464	72	Core 17A	50-59 cm
LPRP-SCSH-PSR-001465	72	Core 17A	50-59 cm
LPRP-SCSH-PSR-001468	81	Core 32A	0-3 cm
LPRP-SCSH-PSR-001477	81	Core 32A	129-138 cm
LPRP-SCSH-PSR-001478	88	Core 29A	0-6 cm
LPRP-SCSH-PSR-001487	88	Core 29A	134-146 cm

Table 5 (attached) summarizes the total number of slices per high resolution core, analyses conducted on the samples, and notes on available data in the database. Only validated data are "viewable" in the database.

FIELD PARAMETERS

During the high resolution coring program, the field crew recorded information on coring depth and core recovery. These field notes are available in Table 6 (attached). Field crew also collected water quality parameters at coring locations collected in September 2005. These data are available in the database and consisted of dissolved oxygen, temperature, salinity, and pH values. Collection of water quality parameters was removed from the field program in October 2005 since data did not fulfill data quality objectives.

ATTACHED TABLES

Table 5: Available High Resolution Core Data on Database

Survey_Id	EventID	Core_Id	CoreNumber	Number of Slices Per Core	Analyses	Comments on Available Data
791	1	54	5A - primary	46	TOC every slice, RAD every other slice plus additional RAD to resolve Cs-137 peak	4 TOC and 3 Cs-137 results not currently available in database.
791	2	56	7A - primary	38	DX,PCB,PEST,PAH,MET,RAD,TOC	Containers QC'ed in April 2007. Some RAD samples reanalyzed for Po-210.
791	2	59	7F - Be-7	1	Separate Be7 grab sample (0-1cm)	Available in database.
791	284	57	9A - primary	40	DX,PCB,PEST,PAH,MET,RAD,TOC	Containers QC'ed in April 2007. Some RAD samples reanalyzed for Po-210.
791	284	60	9F - Be-7	1	Separate Be7 grab sample (0-1cm)	Available in database.
791	290	58	10A Primary	47	TOC every slice, RAD every other slice	TOC available in database; some RAD samples reanalyzed for Po-210.
791	290	61	10D-SECONDARY	41	RAD every other slice	2 RAD samples not currently available in database.
791	291	72	17A-primary	35	Analyses submitted - but stopped	Containers QC'ed in April 2007. Some RAD samples reanalyzed for Po-210.
791	291	73	17D-secondary	37	RAD every other slice	Available in database.
791	292	76	18A-primary	39	TOC every slice, RAD every other slice	TOC available in database, but 2 RAD samples not currently available in database.
791	293	79	37A-primary	38	TOC every slice, RAD every other slice	TOC available in database, but 4 RAD samples not currently available in database.
791	293	80	37D-secondary	47	RAD every other slice	9 RAD samples not currently available in database.
791	318	81	32A-primary	34	DX,PCB,PEST,PAH,MET,RAD,TOC	Containers QC'ed in April 2007. Some RAD samples reanalyzed for Po-210.
791	318	84	32D-Secondary	43	RAD every other slice	Available in database.
791	319	85	1A - primary	31	TOC every slice, RAD every other slice	TOC available, but 1 RAD sample not currently available in database.
791	319	87	1D - secondary	49	RAD every other slice	Available in database.
791	322	88	29A - primary	49	DX,PCB,PEST,PAH,MET,RAD,TOC	Containers QC'ed in April 2007. Some RAD samples reanalyzed for Po-210.
791	322	90	29D - secondary	43	RAD every other slice	Available in database.
791	323	91	24A-primary	20	TOC every slice, RAD every other slice	TOC available in database; some RAD samples reanalyzed for Po-210.
791	323	93	24D-secondary	19	RAD every other slice	Available in database.
791	324	94	26A-primary	32	DX,PCB,PEST,PAH,MET,RAD,TOC	Containers QC'ed in April 2007. Some RAD samples reanalyzed for Po-210.
791	324	95	26B-secondary	27	RAD every other slice	Available in database.
791	519	518	13A - primary	43	TOC every slice, RAD every other slice	TOC available, but 7 RAD samples not currently available in database.
791	519	520	13D - secondary	41	RAD every other slice	5 RAD samples not currently available in database.
791	520	521	28A-primary	24	TOC every slice, RAD every other slice	Available in database.
791	520	523	28D-secondary	19	RAD every other slice	Available in database (8 extra TOC samples submitted).

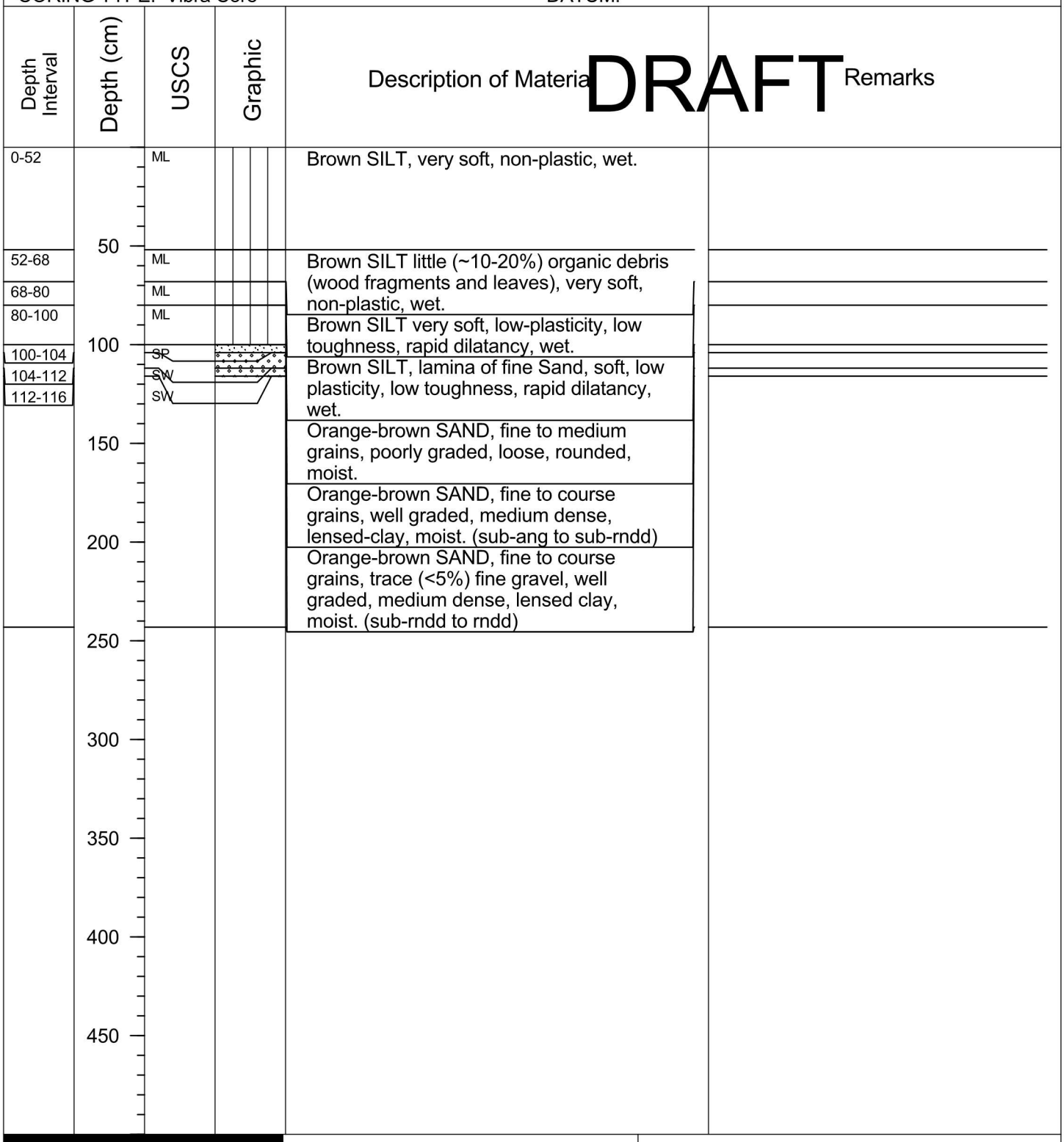
Table 6: Field Parameters Collected during the High Resolution Coring Program

Common Name	Date	Ambient Air Temperature (°F)	River Mile	Location ID	Total Depth Core Barrel Advanced (feet)[1]	Length of Core Recovered (inches)	Bottom Elevation of Core (inches)[2]	No. of Subcores	Subcore 1 length (inches)	Subcore 2 length (inches)	Subcore 3 length (inches)	Subcore 4 length (inches)	Subcore 5 length (inches)	Subcore 6 length (inches)	Subcore 7 length (inches)	Subcore 8 length (inches)	Coordinates (E,N)	Water Quality Parameters					Comments
																		pH	Temperature (°C)	Conductivity (S/cm)	DO (mg/L)	Salinity (%)	
001A	10/6/2005	72	12.3	G0000011	15.0	96	-96	2	123	100							596912.4, 728361.6						
001B	10/7/2005	70	12.3	G0000011	15.0	150	-150	4	100	100	100	80					596916.6, 728358.4						Silt/Sand interface at approximately 180 cm.
001D	10/7/2005	70	12.3	G0000011	15.0	131	-131	3	100	100	133						596918.2, 728359.4						Silt/Sand interface at approximately 160 cm.
005D	9/14/2005	80	1.05	G0000003	29.0	315	-315	8	39	36	36	36	Not available	Not available	Not available	Not available	589123.8, 597694.4						Black/Brown interface at approximately 20 feet 5 inches. First Core advanced to refusal at 19.5 feet and abandoned because black/brown interface was not reached. Core location at 6 feet from No. 005A location.
005C	9/5/2005	82	1.05	G0000002	29.0	228	-228	6	39	36	36	36	36	45			689423.9, 597694.4	7.32	25.1	30.5	4.91	1.9	Black/Brown interface at approximately 17 feet 7 inches below the top of mud.
005B	9/15/2005	82	1.05	G0000002	29.0	266	-266	7	39	37	36	36	36	48	34		689423.9, 597694.4	7.32	25.1	30.5	4.91	1.9	Water depth at 8:30 AM = 10.0 feet. No black/brown smear observed on outside of core barrel during extraction. Black/brown interface at approximately 17 feet 9 inches. Approximately 17 feet of silt.
005A	9/14/2005	80	1.05	G0000002	29.0	240	-240	6	38	34	36	36	Not available	Not available			689423.8, 597694.4						Silt-gray sand at 149 inches. Gray sand/brown clay at 174 inches. Water depth at 8:50 AM is 8.4 feet.
007D	9/19/2005	80	1.4	G0000004	29.0	276	-276	7	36	36	36	36	36	36	60		598086.67, 691132.12	7.43	25.3	32.4	7.5	2.04	Silt/sand interface appears to be at approximately 20 feet.
007C	9/19/2005	8	1.4	G0000004	28.5	244	-244	6	36	36	37	38	37	61			59808.9, 691132.6	7.43	25.3	32.4	7.5	2.04	Approximately 20 feet of silt. Bottom 6 inches of coarse gravel fell into drive shoe at bottom of core and was unable to be retained.
007B	9/15/2005	82	1.4	G0000004	28.0	336	-238	6	40	37	36	36	36	53			598082.5, 691134.5	7.69	25.4	8.32	8.18	0.45	Black/brown interface appears to be at approximately 18 feet.
007A	9/19/2005	80	1.4	G0000004	28.5	211	-211	6	37	36	36	37	36	30			598078.73, 691133.57	7.43	25.3	32.4	7.5	2.04	Silt/sand-gravel interface appears to be at approximately 17 feet.
009A	9/20/2005	78	2.2	G0000005	29.0	272	-272	8	36	36	36	36	36	36	36	20	597588.66, 694851.81	7.45	25.1	33.5	4.15	2.12	Silt/clay interface at very bottom of core, approximately 22 feet 4 inches.
009B	9/20/2005	75	2.2	G0000005	31.0	288	-288	8	36	36	36	36	36	36	36	36	597582.21, 694862.15	7.46	25.1	32.7	4.22	1.98	Silt/clay interface appears to be at approximately 23 feet.
009C	9/20/2005	78	2.2	G0000005	31.0	285	-285	8	36	36	36	36	36	36	36	33	597581.0, 694855.0	7.46	25.1	32.7	4.22	1.98	Silt/sand interface at approximately 23 feet
009D	9/21/2005	75	2.2	G0000005	31.0	296	-296	8	36	36	36	36	36	36	36	44	597583.92, 697867.75	7.36	24.3	31.9	3.96	2.00	
010A	9/21/2005	80	2.6	G0000006	18.5	210	-210	6	36	36	36	48	28	27				7.27	25.2	29.2	3.43	1.81	Silt-sand/clay interface at approximately 11 feet below top of mud.
010B	9/22/2005	80	2.6	G0000006	22.0	213	-213	5	41	39	39	39	53				595393, 698470	7.34	24.6	31.6	3.8	1.97	Silt/sand interface at approximately 330 cm.
010C	9/22/2005	80	2.6	G0000006	18.0	181	-181	5	39	39	39	30	33				595388, 695477	7.34	24.6	31.6	3.8	1.97	
010D	9/22/2005	78	2.6	G0000006	23.0	252	-252	7	35	39	39	39	39	39	26			7.34	24.6	31.6	3.8	1.97	Silt/sand-clay interface at approximately 13 feet (or 4 meters).
013A	10/21/2005	55	10	G0000016	15.0	148	-148	4	39	39	39	30					592135.3, 718843.5						Approximately 2 cm of sediment lost from bottom of segment #1 while cutting.
013B	10/21/2005	55	10	G0000016	15.0	108	-108	3	39	39	30						592134.8, 718845.6						
013D	10/21/2005	55	10	G0000016	15.0	140	-140	4	39	39	31	31					592136.6, 718844.2						
017A	9/26/2005	70	3.5	G0000007	14.0	127	-127	3	39	39	49						591083.92, 694324.88	7.37	22.3	18.5	4.58	1.1	Silt/clay interface at approximately 118 cm.
017B	9/23/2005	70	3.5	G0000007	16.0	126	-126	3	39	39	47						591089.42, 694334.79	7.36	24.8	28.8	3.91	1.78	Silt/clay interface at approximately 290 cm.
017C	9/23/2005	70	3.5	G0000007	16.0	128	-128	3	39	39	50						591090.50, 694320.06	7.36	24.8	28.8	3.91	1.78	Silt/clay interface at approximately 12 feet and 6 inches. Clay contains medium-coarse gravel.
017D	9/26/2005	70	3.5	G0000007	17.0	204	-204	5	39	39	49	39	37				591085.82, 694336.52	7.37	22.4	18.8	4.32	1.1	
018A	9/27/2005	72	4.1	G0000008	22.0	255	-255	7	33	39	39	39	39	39	26		589225.89, 692617.96	7.36	22.7	16.1	4.48	0.95	Silt-sand interface at approximately 19 feet 9 inches. Approximately 1.5 feet of sediment lost from bottom of segment # 1 during cutting and capping.
018B	9/27/2005	72	4.1	G0000008	21.0	215	-215	6	37	39	39	39	39	22			589235.79, 692618.13	7.36	22.7	16.1	4.48	0.95	Silt-sand interface at approximately 17 feet and 2 inches. Approximately 1 foot of sediment lost from bottom of segment # 1 during cutting and capping.
018C	9/27/2005	72	4.1	G0000008	22.0	230	-230	6	39	39	39	39	39	36			589238.93, 692604.92	7.36	22.7	16.1	4.48	0.95	
024A	10/10/2005	58	6.4	G0000013	15.0	152	-152	4	39	39	48	26					585492.5, 701758.8						Silt/sand interface at approximately 300 cm.
024B	10/11/2005	70	6.4	G0000013	15.0	125	-125	3	39	39	46						585493.2, 701760.4						
024D	10/11/2005	70	6.4	G0000013	15.0	144	-144	4	39	39	39	26					585491.5, 701759.7						Silt/sand interface at approximately 80 cm.
026A	10/11/2005	60	7.8	G0000014	14.0	67	-67	2	33	33							588848.4, 708051.8						Silt/sand interface at approximately 130 cm.
026B	10/11/2005	60	7.8	G0000014	8.0	60	-60	2	28	28							588849.6, 708052.4						Silt/sand interface at approximately 140 cm.
026D	10/20/2005	48	7.8	G0000014	8.0	39	-39	1	39								588848.9, 708053.1						Two cores were collected at this location both labeled 026D. Both cores were nearly identical in recovery.[3]
028A	10/24/2005	40	10.8	G0000017	15.0	112	-112	3	39	39	33						592665.4, 722784.7						
028B	10/24/2005	40	10.8	G0000017	15.0	114	-114	3	39	39	35						592664.3, 722786.8						
028D	10/24/2005	40	10.8	G0000017	15.0	97	-97	3	39	28	29						592666.2, 722785.3						
029A	10/7/2005	70	11	G0000012	15.0	143	-143	4	39	39	35	29					593421.0, 723365.1						Silt/sand interface at approximately 170 cm.
029B	10/7/2005	70	11	G0000012	15.0	102	-102	3	39	39	23						593425.1, 723367.8						
029D	10/10/2005	55	11	G0000012	15.0	136	-136	4	39	39	28	29					593427.3, 723368.4						Approximately 29 cm of very turbid water was lost from segment # 3 during the cutting of segments # 3 and 4. Material was so liquefied that it was not possible to prevent loss.
032A	10/6/2005	72	12.6	G0000010	13.0	110	-110	3	39	39	27						596404.7, 723923.2						Silt/sand interface at approximately 190 cm.
032B	10/6/2005	72	12.6	G0000010	13.5	161	-161	4	39	39	39	43					596405.2, 723624.5						Silt/sand interface at approximately 190 cm.
032D	10/6/2005	72	12.6	G0000010	11.0	112	-112	3	39	39	33						596406.0, 729621.6						Silt/sand interface at approximately 113 cm.
037D	10/4/2005	80	18	G0000009	9.0	98	-98	2	39	57							594772.3, 750526.7						It appears that there is approximately 200 cm of silty sand which then transitions to fine/medium sand.
037B	10/5/2005	78	18	G0000009	10.0	103	-103	2	44	58													
037A	10/4/2005	80	18	G0000009	8.2	80	-80	2	39	39							594771.1, 750526.0						Unable to identify depth of black/brown interface. Coarse blue-grey sand identified in bottom of core.

1: Core barrel diameter is 4 inches.
2: Top elevation of core is 0 inch.
3: Core 26A was processed for chemical parameters, and Core 26B was archived in the freezer. Two separate cores were collected and labeled Core 26D. The field crew misread the "26D" label as "26B" and processed accordingly (data available in database). The remaining Core 26D was left in refrigerato

PROJECT: Lower Passaic River RI
NUMBER: 4553001
CORING FIRM: Aqua Survey Inc.
CORING OPERATOR:
CORING TYPE: Vibra Core

DATE: 10/6/2005
TIME:
LOGGED BY: K. Burns
RIVER MILE: 12.3
DATUM:



MALCOLM PIRNIE

LOG OF CORE 001A

CID: 0000023

EASTING: 596912.4
NORTHING: 728361.6
ELEVATION: 0
REFUSAL DEPTH (CM):
RECOVERY (CM): 243
CORE BARREL ADVANCED(CM): 457

PROJECT: Lower Passaic River RI
NUMBER: 4553001
CORING FIRM: Aqua Survey Inc.
CORING OPERATOR:
CORING TYPE: Vibra Core

DATE: 10/7/2005
TIME:
LOGGED BY: K. Burns
RIVER MILE: 12.3
DATUM:

Depth Interval	Depth (cm)	USCS	Graphic	Description of Materia	Remarks
0-36		ML		Brown SILT little (~10-20%) organic debris (leaves), very soft, non-plastic, wet.	
36-75	50	ML		Brown SILT, very soft, non-plastic, rapid dilatancy, wet.	
75-100		ML		Brown SILT, very soft, non-low plasticity, lamina of fine sand and organic debris (leaves), rapid dilatancy, wet.	
100-145	100	ML		Dark brown SILT, soft, low plasticity, rapid to slow dilatancy, low toughness, wet.	
145-160	150	SP		Reddish-brown SAND trace (10%) Silt, medium dense, poorly graded, lensed black silt, moist.	
	200				
	250				
	300				
	350				
	400				
	450				

MALCOLM PIRNIE

LOG OF CORE 001D

CID: 0000025

EASTING: 596918.2
NORTHING: 728359.4
ELEVATION: 0
REFUSAL DEPTH (CM):
RECOVERY (CM): 333
CORE BARREL ADVANCED(CM): 457

PROJECT: Lower Passaic River RI
NUMBER: 4553001
CORING FIRM: Aqua Survey Inc.
CORING OPERATOR:
CORING TYPE: Vibra Core

DATE: 9/14/2005
TIME:
LOGGED BY: D. Auld
RIVER MILE: 1.05
DATUM:

Depth Interval	Depth (cm)	USCS	Graphic	Description of Material	Remarks
0-46		ML		Dark grey-black SILT, soft, silt, non-plastic, wet.	Slight odor <IBID>
46-104	50	ML		Dark grey/black SILT, very soft, low plasticity, wet.	
104-112	100	ML		Grey-brown SILT, low plasticity, slow dilatancy, wet.	From 100 cm to 180 cm organic debris (leaves and twigs) are throughout core
112-165		ML		Dark brown SILT, slow dilatancy, low plasticity, wet.	
165-239	150	ML		Black SILT, slow dilatancy, low plasticity, wet.	Slight odor
239-259	200	ML		Brown black SILT with Clay, slow dilatancy, low to medium plasticity, wet.	Strong petrolium odor
259-287	250	ML		Dark grey SILT, slow dilatancy, low to medium plasticity, wet.	trace amounts or organic debris (5-10%)
287-307		ML		Grey SILT, slow dilatancy, low to medium plasticity, wet.	
307-378	300	ML		Dark grey/black SILT trace fine Sand (~10%), medium plasticity, wet.	
378-401	350	SP-SM		Grey SAND with Silt, (~5-10%) silt, fine grained, slow dilatancy, wet	
401-442	400	SP		Grey SAND with fine Gravel (~15%), sand: fine to medium course, slow dilatancy, wet.	
442-488	450	SW-SC		Grey SAND with Clay, fine, wet.	

MALCOLM PIRNIE

LOG OF CORE 005A

CID: 0000002

EASTING: 597694.4
NORTHING: 689423.8
ELEVATION: 0
REFUSAL DEPTH (CM):
RECOVERY (CM): 610
CORE BARREL ADVANCED(CM): 884

PROJECT: Lower Passaic River RI
NUMBER: 4553001
CORING FIRM: Aqua Survey Inc.
CORING OPERATOR:
CORING TYPE: Vibra Core

DATE: 9/14/2005
TIME:
LOGGED BY: D. Auld
RIVER MILE: 1.05
DATUM:

Depth Interval	Depth (cm)	USCS	Graphic	Description of Materia DRAFT	Remarks
	550				
	600				
	650				
	700				
	750				
	800				
	850				
	900				
	950				

MALCOLM PIRNIE

LOG OF CORE 005A

CID: 0000002

EASTING: 597694.4
NORTHING: 689423.8
ELEVATION: 0
REFUSAL DEPTH (CM):
RECOVERY (CM): 610
CORE BARREL ADVANCED(CM): 884

PROJECT: Lower Passaic River RI
NUMBER: 4553001
CORING FIRM: Aqua Survey Inc.
CORING OPERATOR:
CORING TYPE: Vibra Core

DATE: 9/19/2005
TIME:
LOGGED BY: D. Auld
RIVER MILE: 1.4
DATUM:

Depth Interval	Depth (cm)	USCS	Graphic	Description of Material	Remarks
0-91	50	ML		Dark grey SILT, soft, non to low plasticity.	No odor
91-201	100, 150, 200	ML		Dark grey/black SILT, soft, low plasticity.	Slight odor
201-424	250, 300, 350, 400	ML		Black SILT, soft, low plasticity.	<IBID>
424-523	450	ML		Black SILT with 10% clay content, low plasticity.	<IBID>

MALCOLM PIRNIE

LOG OF CORE 007A

CID: 0000004

EASTING: 598078.73
NORTHING: 691133.57
ELEVATION: 0
REFUSAL DEPTH (CM):
RECOVERY (CM): 535
CORE BARREL ADVANCED(CM): 869

PROJECT: Lower Passaic River RI
NUMBER: 4553001
CORING FIRM: Aqua Survey Inc.
CORING OPERATOR:
CORING TYPE: Vibra Core

DATE: 9/19/2005
TIME:
LOGGED BY: D. Auld
RIVER MILE: 1.4
DATUM:

Depth Interval	Depth (cm)	USCS	Graphic	Description of Materia DRAFT	Remarks
523-536	550	ML		Grey/Black SILT with Sand (~15-20% medium sand).	
536-579		SP		Grey/Brown SAND and Gravel, sand: medium grained; gravel: fine grained.	

600
650
700
750
800
850
900
950

MALCOLM PIRNIE

LOG OF CORE 007A

CID: 0000004

EASTING: 598078.73
NORTHING: 691133.57
ELEVATION: 0
REFUSAL DEPTH (CM):
RECOVERY (CM): 535
CORE BARREL ADVANCED(CM): 869

PROJECT: Lower Passaic River RI
NUMBER: 4553001
CORING FIRM: Aqua Survey Inc.
CORING OPERATOR:
CORING TYPE: Vibra Core

DATE: 9/20/2005
TIME:
LOGGED BY: D. Auld
RIVER MILE: 2.2
DATUM:

Depth Interval	Depth (cm)	USCS	Graphic	Description of Materia	Remarks
0-48		ML		Dark brown SILT, soft, non to low plasticity.	
48-104	50	ML		Dark brown SILT, little Organic debris (~15%).	
104-211	100	ML		Dark brown/black SILT trace Organic debris.	
211-599	150	ML		Dark brown/black SILT with Clay. Clay content about 10-15%, low plastcity.	
	200				
	250				
	300				
	350				
	400				
	450				

MALCOLM PIRNIE

LOG OF CORE 009A

CID: 0000005

EASTING: 597588.66
NORTHING: 694851.81
ELEVATION: 0
REFUSAL DEPTH (CM):
RECOVERY (CM): 691
CORE BARREL ADVANCED(CM): 884

PROJECT: Lower Passaic River RI
NUMBER: 4553001
CORING FIRM: Aqua Survey Inc.
CORING OPERATOR:
CORING TYPE: Vibra Core

DATE: 9/20/2005
TIME:
LOGGED BY: D. Auld
RIVER MILE: 2.2
DATUM:

Depth Interval	Depth (cm)	USCS	Graphic	Description of Material	Remarks
	550				
599-706	600	ML		Black SILT with Clay (~20-25%), low to medium plasticity.	
	650				
	700				
706-734		ML		Brown/black SILT with Sand (~25% fine brown sand).	
734-757		MH		Grey SILT with Clay little Sand, fine grained sand.	
	750				
757-813		CL		Green CLAY, medium plasticity.	
	800				
	850				
	900				
	950				

MALCOLM PIRNIE

LOG OF CORE 009A

CID: 0000005

EASTING: 597588.66
NORTHING: 694851.81
ELEVATION: 0
REFUSAL DEPTH (CM):
RECOVERY (CM): 691
CORE BARREL ADVANCED(CM): 884

PROJECT: Lower Passaic River RI
NUMBER: 4553001
CORING FIRM: Aqua Survey Inc.
CORING OPERATOR:
CORING TYPE: Vibra Core

DATE: 9/22/2005
TIME:
LOGGED BY: K. Burns (book)
RIVER MILE: 2.6
DATUM:

Depth Interval	Depth (cm)	USCS	Graphic	Description of Materia	Remarks
0-91	50	ML		Dark grey/black SILT trace (<5%) very fine to fine Sand, non-plastic, very soft, rapid dilatancy, organic debris (leaves) approximately at 41 cm depth (~20%), wet	
91-167	100 150	ML		Black/dark brown SILT, little (20%) Organic debris (leaves), very soft, non to low plasticity, low - no toughness, rapid dilatancy, wet.	
167-257	200 250	ML		Black SILT little Organic debris, soft, low plasticity, rapid dilatancy, low to no toughness, wet.	
257-377	300 350	ML		Black SILT little Organic debris (5-10%), soft, low plasticity, rapid dilatancy, wet.	
377-385		ML		Reddish-brown SILT, non to low dry strength, no plasticity, soft, rapid dilatancy, dry.	
385-398	400 450	ML		Reddish-brown SILT, none to low dry strength, no plasticity, soft, rapid dilatancy, dry.	

MALCOLM PIRNIE

LOG OF CORE 010A

CID:

EASTING:
NORTHING:
ELEVATION: 0
REFUSAL DEPTH (CM):
RECOVERY (CM): 398
CORE BARREL ADVANCED(CM):

PROJECT: Lower Passaic River RI
NUMBER: 4553001
CORING FIRM: Aqua Survey Inc.
CORING OPERATOR:
CORING TYPE: Vibra Core

DATE: 9/23/2005
TIME:
LOGGED BY: K. Burns (book)
RIVER MILE: 2.6
DATUM:

Depth Interval	Depth (cm)	USCS	Graphic	Description of Material	Remarks
0-240	50, 100, 150, 200	ML		Black/dark brown SILT some (20-25%) Organic debris (leaves and twigs), very soft to soft, non plastic, rapid dilatancy, no thread, wet.	
240-359	250, 300, 350	ML		Black/dark brown SILT little (10%) Organic debris (twigs), soft, low plasticity, rapid dilatancy, low toughness, moist.	
359-381		SP		Reddish-brown SAND, very fine to fine grains, poorly sorted, dense to hard, moist.	
381-388		CL		Reddish-brown CLAY, medium stiffness, medium to high plasticity, medium toughness, none dilatancy, moist.	
388-414	400	SP		Reddish-brown SAND, very fine to fine grains, poorly sorted, dense to hard, moist.	
414-440		CL		Reddish-brown CLAY, medium stiffness, medium to hard plasticity, none dilatancy, moist.	
440-454	450	SP		Reddish-brown SAND, very fine to fine grains, poorly sorted, dense to hard, moist.	

MALCOLM PIRNIE

LOG OF CORE 010D

CID:

EASTING:
NORTHING:
ELEVATION: 0
REFUSAL DEPTH (CM):
RECOVERY (CM): 403
CORE BARREL ADVANCED(CM):

PROJECT: Lower Passaic River RI
NUMBER: 4553001
CORING FIRM: Aqua Survey Inc.
CORING OPERATOR:
CORING TYPE: Vibra Core

DATE: 9/21/2005
TIME:
LOGGED BY: D. Auld
RIVER MILE: 2.6
DATUM:

Depth Interval	USCS	Description of Materia	Remarks
0-84	ML	Dark grey/black SILT trace Sand (f/c), very soft, non-plastic.	
84-170	ML	Black SILT little (~10-20%) Organic debris, non-low plasticity.	
170-307	ML	Black SILT, low plasticity.	
307-363	SW-SC	Reddish-brown SAND some Clay (~30% clay), well graded.	
363-374	SW-SC	Reddish-brown SAND with Clay, very saturated.	
374-397	SW-SC		
397-434	SW-SC	Reddish-brown SAND with Clay, moist. Reddish-brown CLAY little Sand (~20%), well graded.	
434-444	SW	Reddish-brown SAND, fine grained, well graded.	
444-469	CL	Reddish-brown CLAY, dense, medium to high plasticity.	
469-488	SW	Reddish-brown SAND, very fine grained, well graded.	

Depth (cm): 50, 100, 150, 200, 250, 300, 350, 400, 450

MALCOLM PIRNIE

LOG OF CORE 010E

CID:

EASTING: 595390
NORTHING: 695486
ELEVATION: 0
REFUSAL DEPTH (CM):
RECOVERY (CM): 444
CORE BARREL ADVANCED(CM): 488

PROJECT: Lower Passaic River RI
NUMBER: 4553001
CORING FIRM: Aqua Survey Inc.
CORING OPERATOR:
CORING TYPE: Vibra Core

DATE: 10/21/2005
TIME:
LOGGED BY: K. Burns
RIVER MILE: 10
DATUM:

Depth Interval	Depth (cm)	USCS	Graphic	Description of Material	Remarks
0-6		ML		Brown SILT, very soft, non-plastic, rapid dilatancy, homogeneous, wet.	
6-139	50	ML		Black SILT, very soft, non-plastic, rapid diatancy, homogeneous, wet.	
	100				
139-247	150	ML		Dark brown SILT, very soft, low plasticity, rapid dilatancy, wet.	S-29 and S-30 (220 - 238 cm) had a strong organic solvent odor
	200				
247-319	250	ML		Brown SILT, soft, low plasticity, rapid dilatancy, low toughness, lamina of fine to very fine sand (~8cm) and lamina of organic debris (leaves).	periodic sand
	300				
319-337		ML		Brown SILT, soft, low plasticity, rapid-slow dilatancy, low toughness, vertical lenses sand (very fine to fine sand), moist.	Core encompsed a horizontal depositional facies change
337-355	350	ML		Brown SILT, soft, low plasticity, rapid-slow dilatancy, low toughness, lamina of very fine to fine sand and sand lenses (vertical on outside of core), moist.	Solvent or orgnic odors
	400				
	450				

MALCOLM PIRNIE

LOG OF CORE 013A

CID: 0000036

EASTING: 592135.3
NORTHING: 718843.5
ELEVATION: 0
REFUSAL DEPTH (CM):
RECOVERY (CM): 377
CORE BARREL ADVANCED(CM): 457

PROJECT: Lower Passaic River RI
NUMBER: 4553001
CORING FIRM: Aqua Survey Inc.
CORING OPERATOR:
CORING TYPE: Vibra Core

DATE: 10/21/2005
TIME:
LOGGED BY: K. Burns
RIVER MILE: 10
DATUM:

Depth Interval	Depth (cm)	USCS	Graphic	Description of Materia	Remarks
0-35		ML		Black silt, very soft, non-plastic, rapid dilatancy, homogeneous, wet	
35-121	50	ML		Brown silt, very soft, non-low plasticity, rapid dilatancy, homogeneous, wet	
	100				
121-211		ML		Brown silt, very soft, low plasticity, rapid dilatancy, lamina of very fine sand, organic debris (leaves), trace <1% clam shells (<1 c, diameter), wet	
	150				
	200				
211-238		ML		Brown silt, soft, low plasticity, rapid dilatancy, homogeneous, wet	
238-321		ML		Brown silt, soft, low plasticity, rapid dilatacy, lamina of very fine sand, wet	
	250				
	300				
321-341		SW		Sand, fine to course grains, medium dence, well graded, wet, rounded-subrounded. Sand is comprised of quartz, sandstone, feldspars, and mafic sediments	
	350				
	400				
	450				

MALCOLM PIRNIE

LOG OF CORE 013D

CID: 0000037

EASTING: 592136.6
NORTHING: 718844.2
ELEVATION: 0
REFUSAL DEPTH (CM):
RECOVERY (CM): 356
CORE BARREL ADVANCED(CM): 457

PROJECT: Lower Passaic River RI
NUMBER: 4553001
CORING FIRM: Aqua Survey Inc.
CORING OPERATOR:
CORING TYPE: Vibra Core

DATE: 9/26/2005
TIME:
LOGGED BY: K. Burns
RIVER MILE: 3.5
DATUM:

Depth Interval	Depth (cm)	USCS	Graphic	Description of Material	Remarks
0-24		ML		Black silt and organic debris (leaves) (40%) trace (5-10%) rock fragments, very soft, non-plastic, rapid dilatancy, wet	
24-54		ML		Dark brown/black silt, very soft, non-low plasticity rapid dilatancy, wet	

50
100
150
200
250
300
350
400
450

MALCOLM PIRNIE

LOG OF CORE 017A

CID: 0000013

EASTING: 591083.92
NORTHING: 694324.88
ELEVATION: 0
REFUSAL DEPTH (CM):
RECOVERY (CM): 315
CORE BARREL ADVANCED(CM): 427

PROJECT: Lower Passaic River RI
NUMBER: 4553001
CORING FIRM: Aqua Survey Inc.
CORING OPERATOR:
CORING TYPE: Vibra Core

DATE: 9/26/2005
TIME:
LOGGED BY: K. Burns
RIVER MILE: 3.5
DATUM:

Depth Interval	USCS	Description of Material	Remarks
0-25	ML	Black silt with some (40%) organic debris (leaves), very soft, non-plastic, rapid dilatancy, wet	
25-86	ML	Black silt, very soft, non-low plasticity, rapid dilatanly	
86-181	ML	Black silt, soft, low plasticity, low toughness, rapid dilatancy, wet	
181-221	ML	Black silt, soft, low plasticity, low toughness, rapid dilatancy, wet	
221-234	ML	Black silt with lensed brown clay (1-1.5 cm), soft, low-plasticity, silt low toughness, rapid dilatancy, wet	
234-273	SP	Sand, very fine to fine, medium dence, poorly sorted, damp	
273-279	SW	Sand trace (5%) fine gravel. Sand - fine to course, medium dence, well graded, rounded, moist	
279-280	CH	Gray clay, very stiff, high plasticity, dence, moist	
280-285	SW	Sand trace (5%) fine gravel, sand - fine to course, medium dence, well graded, rounded, Gravel - subrounded-rounded, moist	
285-518	CH	Gray clay, very stiff, high plasticity, laminated (brown silt < 1 mm), high toughness, dilatancy-none, moist	

Depth (cm): 50, 100, 150, 200, 250, 300, 350, 400, 450

Graphic

MALCOLM PIRNIE

LOG OF CORE 017D

CID: 0000014

EASTING: 591085.82
NORTHING: 694336.52
ELEVATION: 0
REFUSAL DEPTH (CM):
RECOVERY (CM): 518
CORE BARREL ADVANCED(CM): 518

PROJECT: Lower Passaic River RI
NUMBER: 4553001
CORING FIRM: Aqua Survey Inc.
CORING OPERATOR:
CORING TYPE: Vibra Core

DATE: 9/26/2005
TIME:
LOGGED BY: K. Burns
RIVER MILE: 3.5
DATUM:

Depth Interval	Depth (cm)	USCS	Graphic	Description of Materia	Remarks
				DRAFT	

550
600
650
700
750
800
850
900
950

MALCOLM PIRNIE

LOG OF CORE 017D

CID: 0000014

EASTING: 591085.82
NORTHING: 694336.52
ELEVATION: 0
REFUSAL DEPTH (CM):
RECOVERY (CM): 518
CORE BARREL ADVANCED(CM): 518

PROJECT: Lower Passaic River RI
NUMBER: 4553001
CORING FIRM: Aqua Survey Inc.
CORING OPERATOR:
CORING TYPE: Vibra Core

DATE: 9/23/2005
TIME:
LOGGED BY: D. Auld
RIVER MILE: 3.5
DATUM:

Depth Interval	Depth (cm)	USCS	Graphic	Description of Material	Remarks
0-54		ML		Black soft silt w/non-low plasticity, slight odor	
	50				
54-179		ML		Black silt w/ low plasticity	
	100				
	150				
179-260		ML		Black silt w/clay (~10% clay content)	
	200				
	250				
260-283		ML		Dark grey, well graded, fine sand	
283-380		CH		Grey clay, medium plasticity w/v 20% medium - course gravel	
	300				
	350				
380-467		SW-SC		Grey trending to brown clayey fine sand	
	400				
	450				
460-630		SW-SC		Brown clayey fine sand	

MALCOLM PIRNIE

LOG OF CORE 017E

CID:

EASTING: 591091.77
NORTHING: 694319.7
ELEVATION: 0
REFUSAL DEPTH (CM):
RECOVERY (CM):
CORE BARREL ADVANCED(CM):

PROJECT: Lower Passaic River RI
NUMBER: 4553001
CORING FIRM: Aqua Survey Inc.
CORING OPERATOR:
CORING TYPE: Vibra Core

DATE: 9/23/2005
TIME:
LOGGED BY: D. Auld
RIVER MILE: 3.5
DATUM:

Depth Interval	Depth (cm)	USCS	Graphic	Description of Materia	Remarks
630-709	550, 600, 650, 700, 750, 800, 850, 900, 950	SP-SC		Brown clayey, poorly graded, fine to medium sand w/l 40% fine to medium gravel	

MALCOLM PIRNIE

LOG OF CORE 017E

CID:

EASTING: 591091.77
NORTHING: 694319.7
ELEVATION: 0
REFUSAL DEPTH (CM):
RECOVERY (CM):
CORE BARREL ADVANCED(CM):

PROJECT: Lower Passaic River RI
NUMBER: 4553001
CORING FIRM: Aqua Survey Inc.
CORING OPERATOR:
CORING TYPE: Vibra Core

DATE: 9/27/2005
TIME:
LOGGED BY: K. Burns
RIVER MILE: 4.1
DATUM:

Depth Interval	Depth (cm)	USCS	Graphic	Description of Materia	Remarks
0-9		ML		Dark brown silt, non-plasic, USCS ML, liquiized	soupy; no cohesion
9-48		ML		Dark brown silt, non-plastic, very soft, rapid dilancy, low toughness, wet, some petroleum odor	Some petroleum odor with sheen
48-133.5	50 100	ML		Black silt, non-plastic, very soft, rapid dilancy, low toughness, wet	
133.5-224	150 200	ML		Black silt, non-plastic, very soft, rapid dilancy, low toughness, wet	
224-272	250	ML		*- Black silt, *-low placisity, soft, rapid dilancy, low toughness, wet	
272-320	300	ML		Black silt with stratified (4-4.5 cm) redish-brown clay. Silt is soft with low plastic. Clay is medium-soft with medium plasicity	
320-435	350 400	ML		Grey-black silt little(~20%) clay. Soft, low plasisity, moist, slow dilancy	moisture content decreases with depth
435-530	450	MH		Gret-black silt some (20-25%) clay, medium stiffness, medium plasticity, slow dilancy, medium toughness, moist-dry	Clay is lensed and brown

MALCOLM PIRNIE

LOG OF CORE 018A

CID: 0000015

EASTING: 589225.89
NORTHING: 692617.96
ELEVATION:
REFUSAL DEPTH (CM):
RECOVERY (CM): 651
CORE BARREL ADVANCED(CM):

PROJECT: Lower Passaic River RI
NUMBER: 4553001
CORING FIRM: Aqua Survey Inc.
CORING OPERATOR:
CORING TYPE: Vibra Core

DATE: 9/27/2005
TIME:
LOGGED BY: K. Burns
RIVER MILE: 4.1
DATUM:

Depth Interval	Depth (cm)	USCS	Graphic	Description of Materia	Remarks
530-571	550	SW		Sand, Fine to course, medium dence, well graded, rounded, moist	Gravel is red-brown siltstone-mudstone

600
650
700
750
800
850
900
950

MALCOLM PIRNIE

LOG OF CORE 018A

CID: 0000015

EASTING: 589225.89
NORTHING: 692617.96
ELEVATION:
REFUSAL DEPTH (CM):
RECOVERY (CM): 651
CORE BARREL ADVANCED(CM):

PROJECT: Lower Passaic River RI
NUMBER: 4553001
CORING FIRM: Aqua Survey Inc.
CORING OPERATOR:
CORING TYPE: Vibra Core

DATE: 9/26/2005
TIME:
LOGGED BY: D. Auld
RIVER MILE: 4.1
DATUM:

Depth Interval	Depth (cm)	USCS	Graphic	Description of Material	Remarks
0-155	0–150	ML		Grey-Black, soft, SIlt, non-low plasticity	Strong odor and oil like sheen
155-234	150–250	ML		Grey-Black soft silt Low plasticity	Strong odor and oil like sheen
234-371	250–371	ML		Clatey black silt (~10-15% clay), low plasticity	Stong odor
371-429	371–429	ML		Clayey black-grey silt, less moisture content, low plasticity	
429-498	429–498	MH		Grey-black silty clay, low moisture content, low-medium plasticity	

MALCOLM PIRNIE

LOG OF CORE 018E

CID:

EASTING: 589232
NORTHING: 692630
ELEVATION: 0
REFUSAL DEPTH (CM):
RECOVERY (CM):
CORE BARREL ADVANCED(CM):

PROJECT: Lower Passaic River RI
NUMBER: 4553001
CORING FIRM: Aqua Survey Inc.
CORING OPERATOR:
CORING TYPE: Vibra Core

DATE: 9/26/2005
TIME:
LOGGED BY: D. Auld
RIVER MILE: 4.1
DATUM:

Depth Interval	Depth (cm)	USCS	Graphic	Description of Materia	Remarks
498-516		SP		Grey, poorly graded fine-medium sand	
516-533		SP		Reddish-brown file-medium sand w/ fine-medium gravel	

550
600
650
700
750
800
850
900
950

MALCOLM PIRNIE

LOG OF CORE 018E

CID:

EASTING: 589232
NORTHING: 692630
ELEVATION: 0
REFUSAL DEPTH (CM):
RECOVERY (CM):
CORE BARREL ADVANCED(CM):

PROJECT: Lower Passaic River RI
NUMBER: 4553001
CORING FIRM: Aqua Survey Inc.
CORING OPERATOR:
CORING TYPE: Vibra Core

DATE: 10/10/2005
TIME:
LOGGED BY: K. Burns
RIVER MILE: 6.4
DATUM:

Depth Interval	USCS	Description of Materia	Remarks
0-32	ML	Dark brown/black silt some (25%) organic debris (leaves and twigs), very soft, non-plastic, wet	
32-56	ML	Dark brown silt, very soft, non-plastic, homogeneous, wet	
56-88		Black silt and sand some (25%) organic debris, silt - very soft, non-plastic; sand - fine to course, well graded, sub-rounded - rounded, organic debris - wood (up to 10 cm) wet, Dredge material	Debris material 56-88cm
88-128	ML	Black silt, very soft, low plasticity, wet, lamina, organic debris (leaves), wet	

Depth (cm): 50, 100, 150, 200, 250, 300, 350, 400, 450

MALCOLM PIRNIE

LOG OF CORE 024A

CID: 0000029

EASTING: 585492.5
NORTHING: 701758.8
ELEVATION: 0
REFUSAL DEPTH (CM):
RECOVERY (CM): 387
CORE BARREL ADVANCED(CM): 457

PROJECT: Lower Passaic River RI
NUMBER: 4553001
CORING FIRM: Aqua Survey Inc.
CORING OPERATOR:
CORING TYPE: Vibra Core

DATE: 10/11/2005
TIME:
LOGGED BY: K. Burns
RIVER MILE: 6.4
DATUM:

Depth Interval	Depth (cm)	USCS	Graphic	Description of Material	Remarks
0-10		ML		Brown silt, very soft, non-plastic, homogeneous, wet	Small shrimp were swimming in top of core
10-34		ML		Brown silt some (25%) organic debris (leaves), very soft, non-plastic, wet	They were in S-1
34-56	50			Black sand and silt little (10 to 20%) organic debris (chunks of wood, twigs) silt very soft, non-plastic sand fine to course, well graded subrounded-rounded. "Dredge material", wet	S-G was comprised 100% of decaying leaves. Dredge material 34cm-56cm
56-68		ML		Black silt, very soft, low plasticity, rapid dilatancy, homogeneous, wet	
68-80	100	ML		Brown silt, very soft, low plasticity, rapid dilatancy, homogeneous, wet	
	150				
	200				
	250				
	300				
	350				
	400				
	450				

MALCOLM PIRNIE

LOG OF CORE 024D

CID: 0000030

EASTING: 585491.5
NORTHING: 701759.7
ELEVATION: 0
REFUSAL DEPTH (CM):
RECOVERY (CM): 366
CORE BARREL ADVANCED(CM): 457

PROJECT: Lower Passaic River RI
NUMBER: 4553001
CORING FIRM: Aqua Survey Inc.
CORING OPERATOR:
CORING TYPE: Vibra Core

DATE: 10/11/2005
TIME:
LOGGED BY: K. Burns
RIVER MILE: 7.8
DATUM:

Depth Interval	Depth (cm)	USCS	Graphic	Description of Material	Remarks
0-63	50	ML		Brown silt, very soft, non-plasticity, rapid diatancy, homogeneous, wet	
63-77		ML		Dark brown silt, trace (<10%) rock fragments, very soft, non-plastic, rapid dilatancy, wet	
77-95		ML			
95-119	100	SW		Black silt, very soft, non-plastic, rapid dilatancy, homogeneous, wet	
	150			Sand little gravel (`20%), loose, well graded, sand fine to course grains, Sand: subrounded-rounded, Gravel: sub-angular to rounded, homogeneous, wet	
	200				
	250				
	300				
	350				
	400				
	450				

MALCOLM PIRNIE

LOG OF CORE 026A

CID: 0000032

EASTING: 588848.4
NORTHING: 708051.8
ELEVATION: 0
REFUSAL DEPTH (CM):
RECOVERY (CM): 170
CORE BARREL ADVANCED(CM): 427

PROJECT: Lower Passaic River RI
NUMBER: 4553001
CORING FIRM: Aqua Survey Inc.
CORING OPERATOR:
CORING TYPE: Vibra Core

DATE: 10/11/2005
TIME:
LOGGED BY: K. Burns
RIVER MILE: 7.8
DATUM:

Depth Interval	Depth (cm)	USCS	Graphic	Description of Material	Remarks
0-27		ML		Brown silt, very soft, non plastic, rapid dilatancy. homogeneous, wet	
27-69	50	ML		Brown silt, very soft, low plasticity, rapid dilatancy, homogeneous, wet	
69-102	100	ML		Dark brown/black silt little (~10%) rock fragments. soft, low plasticity, rapid dilatancy, rapid dilatancy, wet, rock fragments: subrounded-subangular, 2-9 cm, poorly graded, rock fragment: reddish brown sandstone. "Dredge material"	Slice S-26 had an 11x7 cm angular rock fragments withing slice. Slice S-28 had a 9x7 cm subrounded rock fragment within the slice
	150				
	200				
	250				
	300				
	350				
	400				
	450				

MALCOLM PIRNIE

LOG OF CORE 026B

CID: 0000009

EASTING: 588849.6
NORTHING: 708052.4
ELEVATION: 0
REFUSAL DEPTH (CM):
RECOVERY (CM): 153
CORE BARREL ADVANCED(CM): 244

PROJECT: Lower Passaic River RI
NUMBER: 4553001
CORING FIRM: Aqua Survey Inc.
CORING OPERATOR:
CORING TYPE: Vibra Core

DATE: 10/24/2005
TIME:
LOGGED BY: K. Burns
RIVER MILE: 10.8
DATUM:

Depth Interval	USCS	Description of Materia	Remarks
0-24	ML	Brown silt, very soft, non-plastic, rapid dilatancy, homogenous, wet	
24-39	ML	Black silt, very soft, non-plastic, rapid dilantancy, homogeneous, wet	
39-58	ML	Brown silt, soft, low plasticity, rapid dilatancy, homogeneous, wet	
58-65	ML		
65-74	SP	Brown silt, some sand (25%), low plasticity, soft, lamina of organic debris (leaves), wet	Slice 23, 74-81, core/slice split down the middle; 1/2 silt, 1/2 sand
74-81	SP-SM		
81-88	ML	Sand, fine to medium grain, loose, poorly graded, homogeneous, moist, well rounded to rounded	
		1/2 black silt, soft, low plasticity, rapid dilatancy, homogeneous, moist*** ***1/2 sand, fine to medium grain, loose, poorly graded, homogeneous, moist	
		Black silt, soft, low-plasticity, rapid diatancy, low toughness, homogeneous, moist	

Depth (cm): 50, 100, 150, 200, 250, 300, 350, 400, 450

MALCOLM PIRNIE

LOG OF CORE 028A

CID: 0000039

EASTING: 592665.4
NORTHING: 722784.7
ELEVATION: 0
REFUSAL DEPTH (CM):
RECOVERY (CM): 284
CORE BARREL ADVANCED(CM): 457

PROJECT: Lower Passaic River RI
NUMBER: 4553001
CORING FIRM: Aqua Survey Inc.
CORING OPERATOR:
CORING TYPE: Vibra Core

DATE: 10/24/2005
TIME:
LOGGED BY: K. Burns
RIVER MILE: 10.8
DATUM:

Depth Interval	Depth (cm)	USCS	Graphic	Description of Material	Remarks
0-21		ML		Brown silt, very soft, little (10-20%) organic debris (leaves), very soft, non-plastic, wet	
21-37		ML		Black silt, very soft, non-plastic, homogeneous, wet	
37-44		ML		Brown silt, soft, non to low plasticity, homogeneous, wet	
44-58	50	ML			
58-65		SM		Brown silt, soft, non to low plasticity, lamina of very fine to fine sand, wet	Core/slice is vertically split in 1/2. 1/2 black silt and 1/2 sand (65-93 cm)
65-93		SP-SM		Sand some silt (~25%) little (10-20%) organic debris (leaves and twigs), sand is very fine to fine, poorly sorted, Silt is ML	
	100			1/2 Black silt, soft, low plasticity, rapid to slow dilatancy, low toughness, moist*** 1/2 reddish brown sand, fine to medium grain, loose, poorly graded, moist, round to sunrounded	
	150				
	200				
	250				
	300				
	350				
	400				
	450				

MALCOLM PIRNIE

LOG OF CORE 028D

CID: 0000040

EASTING: 592666.2
NORTHING: 722785.3
ELEVATION: 0
REFUSAL DEPTH (CM):
RECOVERY (CM): 246
CORE BARREL ADVANCED(CM): 457

PROJECT: Lower Passaic River RI
NUMBER: 4553001
CORING FIRM: Aqua Survey Inc.
CORING OPERATOR:
CORING TYPE: Vibra Core

DATE: 10/7/2005
TIME:
LOGGED BY: K. Burns
RIVER MILE: 11
DATUM:

Depth Interval	Depth (cm)	USCS	Graphic	Description of Materia	Remarks
0-54		ML		Brown, silt, very soft, non-plastic, rapid dilatancy, wet, homogenious	
54-80		ML		Brown, silt, very soft, low plasticity, rapid dilatancy, wet, homogenious	
80-119		ML		Black silt, very soft, low plasticity, rapid dilatancy, low threadness, wet, homogenious	
119-129		ML		Dark brown/ black silt, very soft,non-low plasticity, rapid dilatancy, laminae, fine sand, wet	
129-139		ML		Black silt, very soft, non-plastic, rapid dilatancy, homogenious, wet	
139-163		ML		Dark brown/black silt and organic debris (1-3" wood chunks) silt, very soft, non-plastic, wet, rapid dilatancy	
163-181		ML		Brown silt, very soft, low plasticity, rapid dilatancy, low threadness, homogenious, wet	

50
100
150
200
250
300
350
400
450

MALCOLM PIRNIE

LOG OF CORE 029A

CID: 0000012

EASTING: 593421
NORTHING: 723365.1
ELEVATION: 0
REFUSAL DEPTH (CM):
RECOVERY (CM): 362
CORE BARREL ADVANCED(CM):

PROJECT: Lower Passaic River RI
NUMBER: 4553001
CORING FIRM: Aqua Survey Inc.
CORING OPERATOR:
CORING TYPE: Vibra Core

DATE: 10/10/2005
TIME:
LOGGED BY: K. Burns
RIVER MILE: 11
DATUM:

Depth Interval	Depth (cm)	USCS	Graphic	Description of Material	Remarks
0-84		ML		Brown silt, very soft, non-plastic, rapid dilatancy, non-homogenious, wet	
	50				
84-131		ML		Black silt, very soft, non-plastic, rapid dilatancy, homogenious, wet	
	100				
131-156		ML		Brown silt, very soft, non-low plasticity, rapid dilatancy, homogenious, wet	
	150				
156-173		ML		Brown silt, very soft, non-low plasticity, laminae of very fine sand and organic debris (leaves) rapid dilatancy, wet	
173-180		SM			
180-186		SP-SM		Sand, fine to course, loose, well graded, wet. Sub-rounded, homogenious	
186-192	200	SP-SM			
192-216		MH		Black sand little silt, fine-medium, loose, poorly graded, sub-rounded, wet	
216-238		SP-SM		Redish-brown sand trace silt. Sand is very fine to fine, poorly sorted, medium dence, homogeneious, wet	
238-248		SW		Brown silt, soft, high plasticity, slow dilatancy, low toughness, moist, homogenious	
	250			Brown silt, soft, high plasticity, slow dilatancy, low toughness, moist, homogenious	
	300			Black sand, fine to course, well graded, medium, wet, sub-rounded to rounded, homogenious	
	350				
	400				
	450				

MALCOLM PIRNIE

LOG OF CORE 029D

CID: 0000028

EASTING: 593427.3
NORTHING: 723368.4
ELEVATION: 0
REFUSAL DEPTH (CM):
RECOVERY (CM): 345
CORE BARREL ADVANCED(CM):

PROJECT: Lower Passaic River RI
NUMBER: 4553001
CORING FIRM: Aqua Survey Inc.
CORING OPERATOR:
CORING TYPE: Vibra Core

DATE: 10/6/2005
TIME:
LOGGED BY: K. Burns
RIVER MILE: 12.6
DATUM:

Depth Interval	Depth (cm)	USCS	Graphic	Description of Materia	Remarks
0-15		ML		Brown silt trace very fine sand, very soft, non-plasic, wet, soupy	
15-34		ML		Brown silt trace very fine sand, very soft, non-plastic, wet	
34-68	50	ML		Brown silt trace sand , organic debris, very soft, non-low plasticity, wet	
68-80		ML		Dark brown silt, laminea, very fine sand, very soft, low plasicity, wet, rapid dilancy, low toughness	
80-138	100	ML		Black silt low plasicity, very soft, rapid dilancy, low toughness, wet	
138-172	150	SP		Orange-brown sand (fine-medium), poorly sorted, loose, rounded, damp	
	200				
	250				
	300				
	350				
	400				
	450				

MALCOLM PIRNIE

LOG OF CORE 032A

CID: 0000020

EASTING: 596404.7
NORTHING: 729623.2
ELEVATION: 0
REFUSAL DEPTH (CM):
RECOVERY (CM): 280
CORE BARREL ADVANCED(CM):

PROJECT: Lower Passaic River RI
NUMBER: 4553001
CORING FIRM: Aqua Survey Inc.
CORING OPERATOR:
CORING TYPE: Vibra Core

DATE: 10/6/2005
TIME:
LOGGED BY: K. Burns
RIVER MILE: 12.6
DATUM:

Depth Interval	Depth (cm)	USCS	Graphic	Description of Materia	Remarks
0-6		ML		Brown silt trace (5-10%) very-fine sand, very soft, non-plastic, wet, soupy	
6-48		ML		Brown silt little (10-15%) very-fine sand, non-plastic, non-plastic, very soft, wet	
48-68	50	ML		Brown silt trace (< 10%) very-fine sand, low plasticity, soft, slow dilatancy, low toughness, wet	
68-87		ML		Dark brown, low plasticity, soft, slow dilancy, low toughness, moist	
87-108	100	ML		Dark brown/black silt, low plasticity, soft, low toughness, slow dilancy, moist	
108-126		ML		Dark brown/brown silt little (10-20%) clay, low-medium plasticity, soft, slow-none dilatancy	
126-180	150	SP		Sand, fine to medium, poorly graded, rounded, moist, orange-brown sand grains are felsic, quartz and feldspars	
	200				
	250				
	300				
	350				
	400				
	450				

MALCOLM PIRNIE

LOG OF CORE 032D

CID: 0000022

EASTING: 596406
NORTHING: 729621.6
ELEVATION: 0
REFUSAL DEPTH (CM):
RECOVERY (CM): 285
CORE BARREL ADVANCED(CM):

PROJECT: Lower Passaic River RI
NUMBER: 4553001
CORING FIRM: Aqua Survey Inc.
CORING OPERATOR:
CORING TYPE: Vibra Core

DATE: 10/4/2005
TIME:
LOGGED BY: K. Burns
RIVER MILE: 18
DATUM:

Depth Interval	Depth (cm)	USCS	Graphic	Description of Materia	Remarks
0-12		ML		Brown silt, little file gravel(*), angular, very soft, non-plastic, rapid dilancy, wet, petoleum	
12-56	50	ML		Dark brown silt, very soft, low toughness, rapid dilancy, wet, petroleum odor	Petroleum odors - PID = 22 mmp; petroleum odors diminish at 22 cm.
56-139	100	ML		Brown silt, soft , low plasicity, low toughness, rapid dilancy, wet petroleum odor	
139-169	150	ML		Brown silt, little clay, lamina of sand (fine), dark brown/black, organic debris, soft, low plasticity, slow- rapid dilancy, low toughness, wet, lamina of sand occures at 2.5 cm.	
169-174	200	SW		Sand trace (*) fine gravel, sand (fine to course), loose, well graded, wet, rounded to subrounded. Sand and gravel is comprised of felsic rock of quartz and feldspars.	
	250				
	300				
	350				
	400				
	450				

MALCOLM PIRNIE

LOG OF CORE 037A

CID: 0000017

EASTING: 594771.1
NORTHING: 750526
ELEVATION:
REFUSAL DEPTH (CM):
RECOVERY (CM): 203
CORE BARREL ADVANCED(CM): 250

PROJECT: Lower Passaic River RI
NUMBER: 4553001
CORING FIRM: Aqua Survey Inc.
CORING OPERATOR:
CORING TYPE: Vibra Core

DATE: 10/4/2005
TIME:
LOGGED BY: K. Burns
RIVER MILE: 18
DATUM:

Depth Interval	Depth (cm)	USCS	Graphic	Description of Material	Remarks
0-12		ML		Dark brown silt, very soft, non-plastic, wet	
12-64	50	ML		Brown silt, very soft, low plasicity, low toughness, rapid dilancy, wet	
64-94		ML		Dark brown/black silt, very soft, non-low plasicity, low tougness, rapid dilancy, petroleum odors, occasional black lamina with dark brown silt, wet	
94-144	100	ML		Brown silt, soft, low plasicity, low toughness, rapid dilancy, wet	
144-233	150	ML		Brown silt, little clay, laminae of fine silt, soft, low plasicity, wet	Ocational black organic laminae, petroleum odor starting at 223 cm
	200				
	250				
	300				
	350				
	400				
	450				

MALCOLM PIRNIE

LOG OF CORE 037D

CID: 0000018

EASTING: 594772.3
NORTHING: 750526.7
ELEVATION:
REFUSAL DEPTH (CM):
RECOVERY (CM): 250
CORE BARREL ADVANCED(CM): 275